

# Colorado Basin Outlook Report JUNE 1, 2002



# Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

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## *How forecasts are made*

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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# COLORADO

## WATER SUPPLY OUTLOOK REPORT

### June 1, 2002

#### Summary

Water year 2002 will be one for the books for some time to come. One of the lowest snowpack accumulations in decades, followed by one of the driest springs in many years, all on the heels of several previous dry years, contributing to below average reservoir storage and dry soils. With all these critical elements in place, the state has the ingredients for a water-short year unseen by most of its residence. This summer's monsoon moisture can help reduce short-term needs, but the state will need an above average snowpack year in 2003 to recover from these deficits.

#### Snowpack

Warm and dry weather allowed snowmelt to proceed unabated throughout the month of May. By the end of the month, only two out of the state's 86 SNOTEL sites had any snow remaining. This left the state with a statewide snowpack of only 2% of average and 10% of last year's totals on this date. The snowpack across most of the state had melted out during the later half of May. This leaves only the Yampa and White, and North and South Platte basins with any snowpack remaining. As a percent of average, they range from 15% in the North Platte Basin, to only 1% of average in the South Platte Basin. As a rule, the state's basins melted out about two months earlier than normal this spring. In many parts of the state this meager snowpack was sitting on very dry soils. As melting began, much of this moisture simply soaked into the ground, before ever making it to the streams. Snowmelt during the month was also hampered by many windy days with low humidities. These conditions can result in a substantial loss of water to sublimation. In a dry year like this, these losses can be significant for many water users. Based on April 1 data, 2002 will be the 5<sup>th</sup> consecutive year with a below average statewide snowpack.

#### Precipitation

Precipitation at Colorado's SNOTEL sites was well below average across the state during May. This marks the ninth consecutive month with below average SNOTEL precipitation. May's statewide totals were only 34% of average. These low percentages helped to decrease the statewide water year (since October 1, 2002) percentage to only 56% of average. Southwestern Colorado continued to report the lowest accumulations in May. Monthly totals

in the Rio Grande and combined San Juan, Animas, Dolores, and San Miguel basins were only 16% and 10% of average, respectively. The Gunnison Basin only fared slightly better at only 20% of average for the month. The South Platte basin reported the highest percent of average in the state, although its total was only 66% of average. Water year totals range from a low of only 44% of average in the San Juan, Animas, Dolores, and San Miguel basins to a high of 64% of average in the Yampa and White basins.

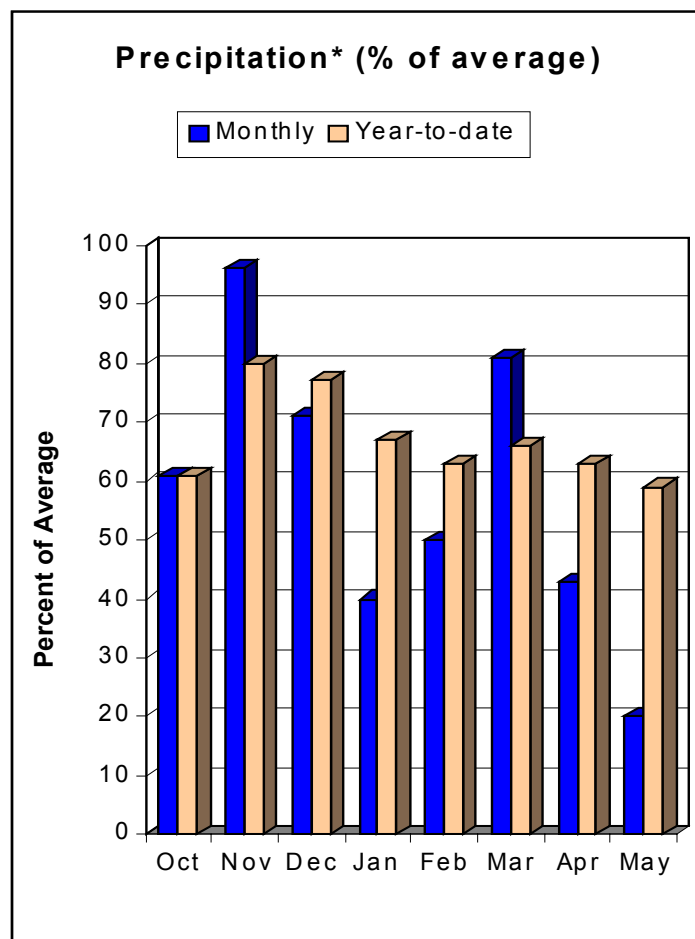
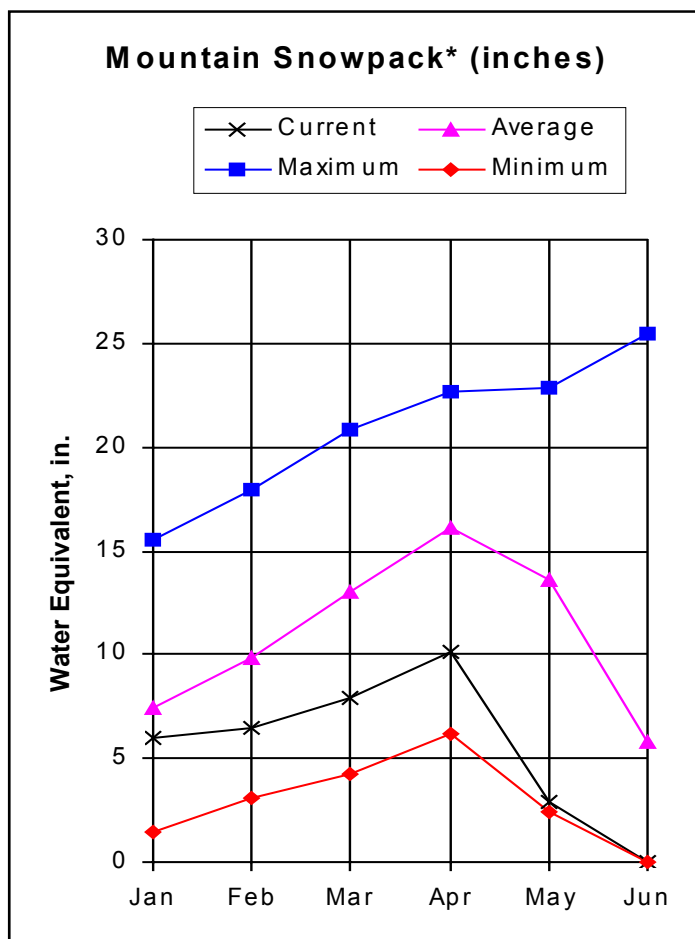
## Reservoir Storage

Early water demands, along with well below average May inflows, contributed to a substantial decrease in reservoir storage on June 1. Statewide storage, as a percent of average, decreased from 86% of average on May 1 to 73% of average on June 1. This is equivalent to a decrease of 185,000 acre-feet, while the average actually increases by 352,000 acre-feet during the month of May. Decreases in volume were seen in all basins during May. The combined San Juan, Animas, Dolores, and San Miguel basins are reporting the lowest percent of average storage at 57%. Other basins with well below average storage include the Rio Grande at 64%, the Arkansas at 66%, and the Colorado at 69%. The state's best storage, as a percent of average is in the Gunnison basin, which is reporting 95% of average. As compared to last year, all basins are reporting storage volumes that are well below those of a year ago. This year's storage in the Arkansas basin is only slightly more than half of last year's. Statewide, this year's storage is only 69% of last year's.

## Streamflow

Another dry month in May brought additional decreases to the streamflow forecasts across Colorado. As a general rule, forecasts range from about 25% to 50% of average across the northern half of the state, while the southern half can expect volumes of only 10% to 25% of average. The lowest forecasts, as a percent of average, occur throughout the San Juan River Basin, with the forecasted inflow into Navajo Reservoir at only 9% of average. Forecasts along the Dolores, Mancos, Rio Grande and lower Arkansas tributaries remain only in the teens for percentage forecast. The state's best outlook, while still quite dismal, is in the tributaries of the upper Colorado River and the northern tributaries of the South Platte River. Here, forecasts call for volumes of 40% to 47% of average. Along some streams in southern Colorado this year could very well be the lowest runoff season on record.

## GUNNISON RIVER BASIN as of June 1, 2002



\*Based on selected stations

The snowpack measurements have been zero since May 28th at all of the twelve automated (SNOTEL) snow measuring sites in the Gunnison Basin. The average melt out date is 54 days later on July 4<sup>th</sup>. In early March the snowpack accumulation peaked at about 60% of the average peak amount which usually occurs around April 1. Warm temperatures and dry conditions from that point on, allowed the snow to melt away rapidly leaving extremely dry slopes where there normally would be a few feet of snow left. The monthly precipitation was only 20% of average during May, which is the basin's lowest monthly accumulation this water year. The water year total is only 59% of the average, which is only 68% of the water year total last year on June 1. Reservoir storage is beginning to fall behind at only 95% of average on June 1, which is about 15% less than last year at this time. With most of the snow already melted, and the dry, warm conditions during May, the stream forecast have been nudged down even lower than last month. Forecasts range from only 12% of average on Tomichi Creek at Sargents, to 54% of average on the Slate River near Crested Butte.

GUNNISON RIVER BASIN  
Streamflow Forecasts - June 1, 2002

		<<===== Drier =====		Future Conditions =====		Wetter =====>>		
Forecast Point	Forecast Period			Chance Of Exceeding *				30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Taylor River blw Taylor Park Resv	APR-JUL	13.0	28	38	37	48	63	103
Slate River nr Crested Butte	APR-JUL	38	44	48	54	52	58	89
East River at Almont	APR-JUL	30	51	65	34	79	100	192
Gunnison River nr Gunnison	APR-JUL	69	85	95	24	124	167	390
Tomichi Creek at Sargents	APR-JUL	3.0	3.6	4.1	13	7.1	11.6	32
Cochetopa Creek blw Rock Creek	APR-JUL	1.9	2.4	2.7	16	4.7	7.6	17.3
Tomichi Creek at Gunnison	APR-JUL	3.2	5.9	10.0	12	15.1	25	81
Lake Fork at Gateview	APR-JUL	28	35	40	32	52	70	126
Blue Mesa Reservoir Inflow	APR-JUL	119	155	180	25	249	350	720
Paonia Reservoir Inflow	MAR-JUN	10.0	15.0	19.0	18	23	31	105
	APR-JUL	12.0	16.0	18.0	17	21	25	106
N.F. Gunnison River nr Somerset	APR-JUL	62	81	95	31	110	135	305
Surface Creek nr Cedaredge	APR-JUL	3.5	4.3	5.0	29	5.8	7.2	17.1
Ridgway Reservoir Inflow	APR-JUL	24	27	30	29	33	38	102
Uncompahgre River at Colona	APR-JUL	19.0	28	35	25	43	55	139
Gunnison River nr Grand Junction	APR-JUL	253	305	340	22	480	686	1560

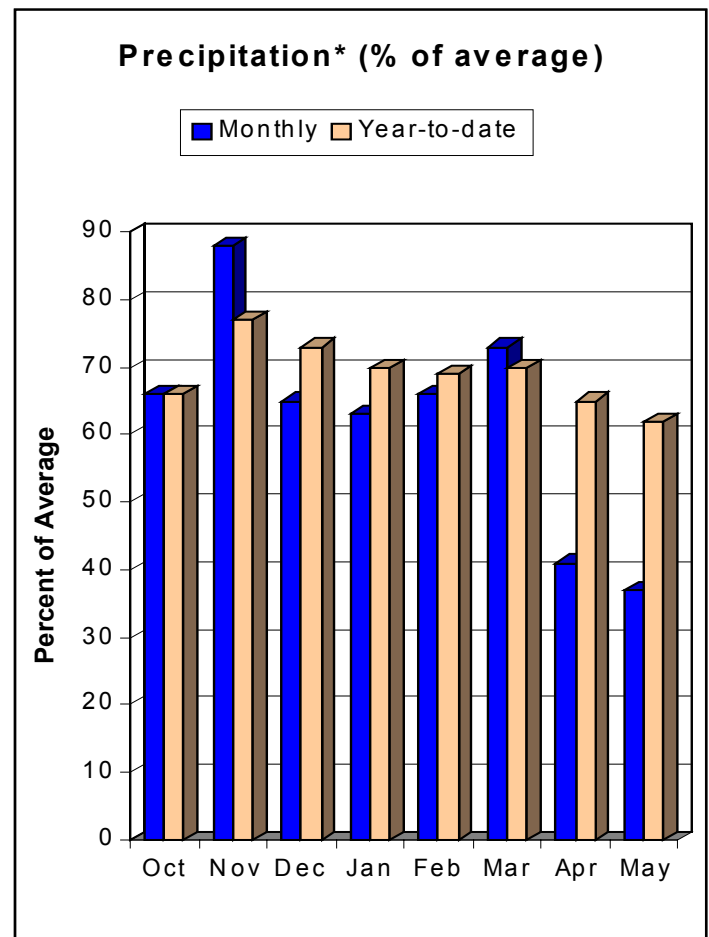
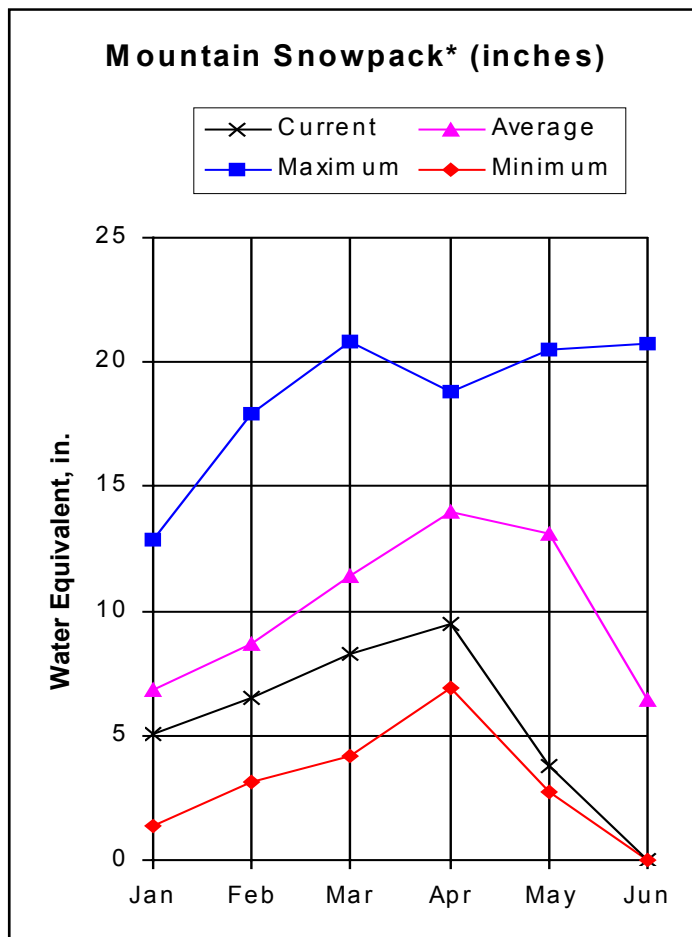
GUNNISON RIVER BASIN Reservoir Storage (1000 AF) - End of May					GUNNISON RIVER BASIN Watershed Snowpack Analysis - June 1, 2002			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
BLUE MESA	830.0	481.7	588.1	517.1	UPPER GUNNISON BASIN	9	0	0
CRAWFORD	14.3	5.5	9.9	12.6	SURFACE CREEK BASIN	2	0	0
FRUITGROWERS	4.3	2.0	4.2	4.0	UNCOMPAHGRE BASIN	3	0	0
FRUITLAND	9.2	1.9	5.3	6.3	TOTAL GUNNISON RIVER BASIN	12	0	0
MORROW POINT	121.0	114.6	114.0	113.8				
PAONIA	18.0	16.5	16.9	15.7				
RIDGWAY	83.2	67.8	75.3	61.2				
TAYLOR PARK	106.0	69.2	84.1	71.8				

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
(2) - The value is natural volume - actual volume may be affected by upstream water management.

## UPPER COLORADO RIVER BASIN as of June 1, 2002



\*Based on selected stations

By May 30th the measurable snow accumulation has managed to melt away at all of the 24 SNOTEL snow measuring locations in the Colorado Basin. The melt out has occurred over 50 days ahead of the average melt out date. The seasonal peak measurements, which was only about 60% of the average peak, occurred during early April, and relatively dry, warm conditions that have persisted ever since have rapidly diminished the snowpack. Precipitation in the mountains during May was only 37% of average, which was the lowest monthly accumulation this water year. The water year total is now only 62% of average, which is 25% less than last year. The combined reservoir storage has diminished significantly from last month and is now only 69% of average, which is only 66% of the amount of storage there was last year at this time. As a result of the early melt out and dry warm conditions during May, the streamflow forecasts have been lowered even further from last month. The forecasts range from 47% of average at the Inflow to Lake Granby, to only 26% of average at the Inflow to Willow Creek Reservoir.

UPPER COLORADO RIVER BASIN  
Streamflow Forecasts - June 1, 2002

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period			Chance Of Exceeding *				30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Lake Granby Inflow	APR-JUL	93	100	105	47	110	119	225
Willow Creek Reservoir Inflow	APR-JUL	6.7	10.2	13.0	26	16.1	21	51
Williams Fork Reservoir inflow	APR-JUL	34	41	45	47	50	57	95
Dillon Reservoir Inflow	APR-JUL	58	65	70	42	81	98	167
Green Mountain Reservoir inflow	APR-JUL	89	104	115	41	126	144	280
Muddy Creek blw Wolford Mtn. Resv.	APR-JUL	12.2	13.9	15.3	26	16.8	19.2	60
Eagle River blw Gypsum	APR-JUL	105	119	130	39	142	161	335
Colorado River nr Dotsero	APR-JUL	242	413	530	37	647	818	1440
Ruedi Reservoir Inflow	APR-JUL	42	51	58	41	66	79	141
Roaring Fork at Glenwood Springs	APR-JUL	157	215	260	37	309	390	710
Colorado River nr Cameo	APR-JUL	600	731	820	34	1037	1357	2420

UPPER COLORADO RIVER BASIN  
Reservoir Storage (1000 AF) - End of May

UPPER COLORADO RIVER BASIN  
Watershed Snowpack Analysis - June 1, 2002

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
DILLON	250.8	182.4	234.9	229.0	BLUE RIVER BASIN	5	0	0
LAKE GRANBY	465.6	147.8	331.1	302.9	UPPER COLORADO RIVER BASIN	16	0	0
GREEN MOUNTAIN	139.0	65.6	69.8	76.1	MUDDY CREEK BASIN	2	0	0
HOMESTAKE	43.0	18.9	18.2	20.3	PLATEAU CREEK BASIN	2	0	0
RUEDI	102.0	71.6	84.5	74.2	ROARING FORK BASIN	7	0	0
VEGA	32.0	14.4	32.9	29.2	WILLIAMS FORK BASIN	2	0	0
WILLIAMS FORK	96.8	49.4	68.0	63.6	WILLOW CREEK BASIN	2	0	0
WILLOW CREEK	9.0	7.5	6.5	7.4	TOTAL COLORADO RIVER BASIN	25	0	0

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

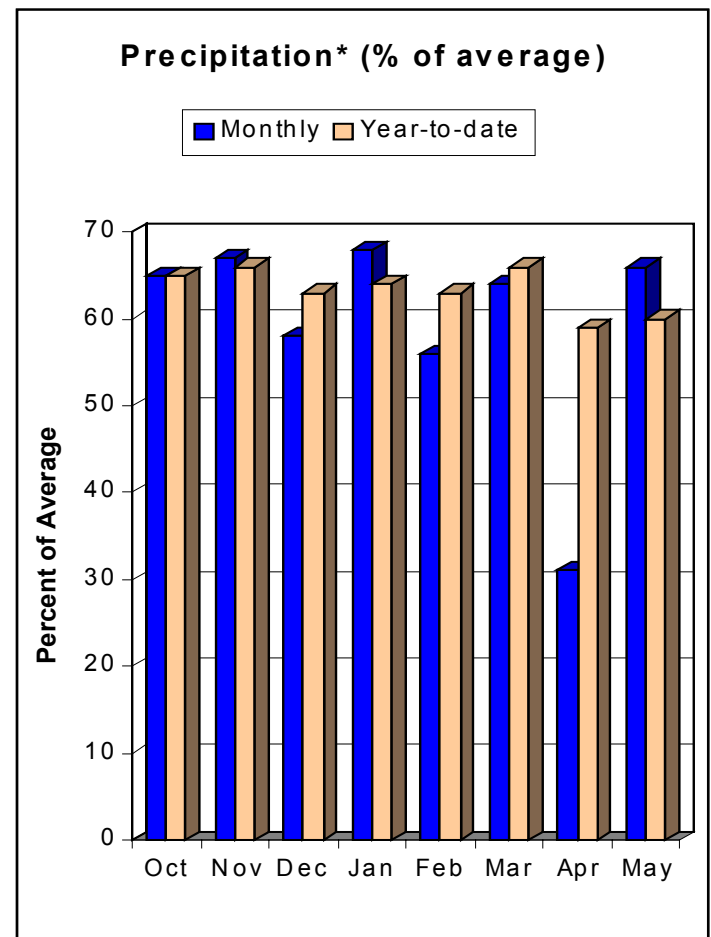
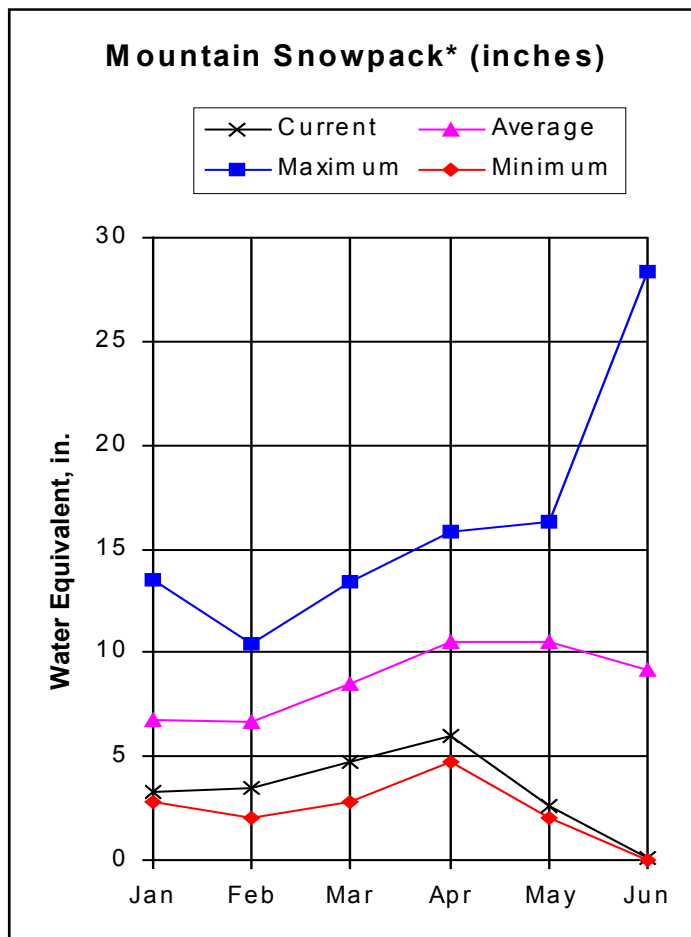
The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural volume - actual volume may be affected by upstream water management.



## SOUTH PLATTE RIVER BASIN as of June 1, 2002



\*Based on selected stations

Out of 15 SNOTEL locations in the South Platte basin only one site has any measurable snow remaining at at. The snow measurement indicates that there is only 1% of average snow accumulation left in the Basin on June 1. The snowpack measurements had peaked in late March, at about 50% of the average peak, and the warm, dry conditions that have persisted through most of the spring have caused the snow to melt out about 30 days ahead of the average melt out date. The precipitation during May was only 66% of average, which was the best monthly accumulation of any basin in the state. The water year total is now 60% of average, which is only 70% of the water year total last year on June 1. The combined reservoir storage has diminished significantly since last month, and is only 72% of average on June 1. There is about 22% less storage then there was last year at this time. The streamflow forecasts have been lowered even further than last month's forecasts. They now range from only 9% of average at the Inflow to Antero Reservoir, to 41% of average at the Big Thompson River at mouth near Drake.

SOUTH PLATTE RIVER BASIN  
Streamflow Forecasts - June 1, 2002

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	Chance Of Exceeding *						30-Yr Avg. (1000AF)
		90%	70%	50% (Most Probable)		30%	10%	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	
Antero Reservoir inflow	APR-JUL	0.7	0.9	1.2	9	1.5	2.2	13.0
Spinney Mountain Reservoir inflow	APR-JUL	5.6	7.3	8.7	22	10.4	13.4	40
Elevenmile Canyon Reservoir inflow	APR-JUL	6.2	7.7	8.7	21	13.6	21	41
Cheesman Lake inflow	APR-JUL	12.2	14.9	17.1	19	19.6	24	89
South Platte River at South Platte	APR-SEP	41	51	58	25	86	127	230
Bear Creek at Morrison	APR-SEP	4.5	5.5	6.2	20	9.7	14.7	31
Clear Creek at Golden	APR-SEP	25	38	47	35	56	69	134
St. Vrain Creek at Lyons	APR-SEP	26	31	34	41	42	54	84
Boulder Creek nr Orodell	APR-SEP	11.1	15.8	19.1	36	22	27	53
South Boulder Creek nr Eldorado Spri	APR-SEP	11.4	14.0	15.8	34	21	29	46
Big Thompson River at mouth nr Drake	APR-SEP	28	40	48	41	56	68	117
Cache La Poudre at Canyon Mouth	APR-SEP	72	95	110	40	148	205	275

SOUTH PLATTE RIVER BASIN  
Reservoir Storage (1000 AF) - End of May

SOUTH PLATTE RIVER BASIN  
Watershed Snowpack Analysis - June 1, 2002

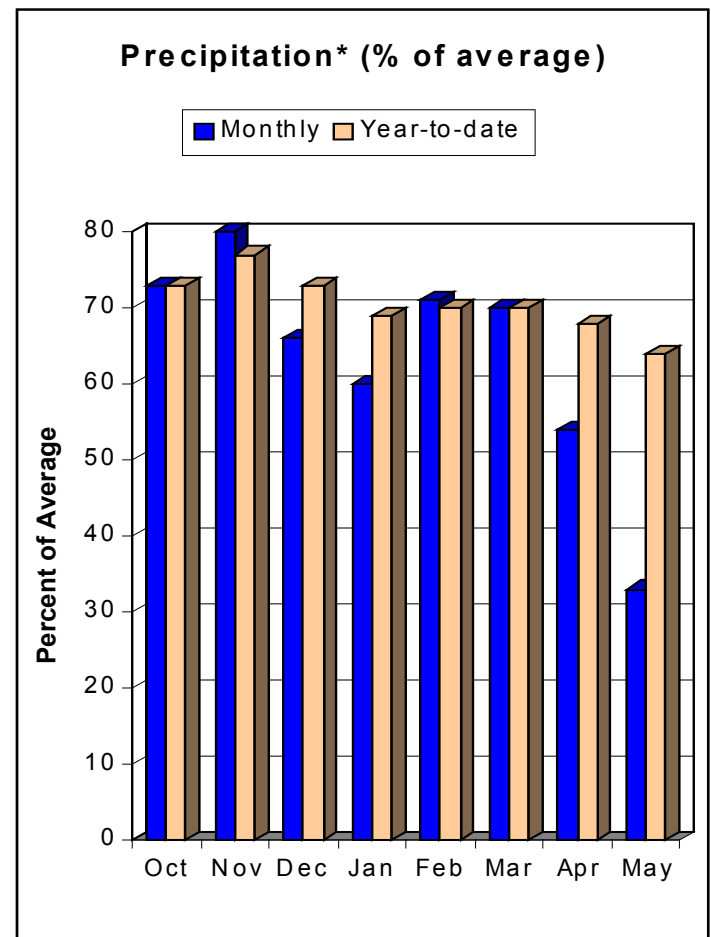
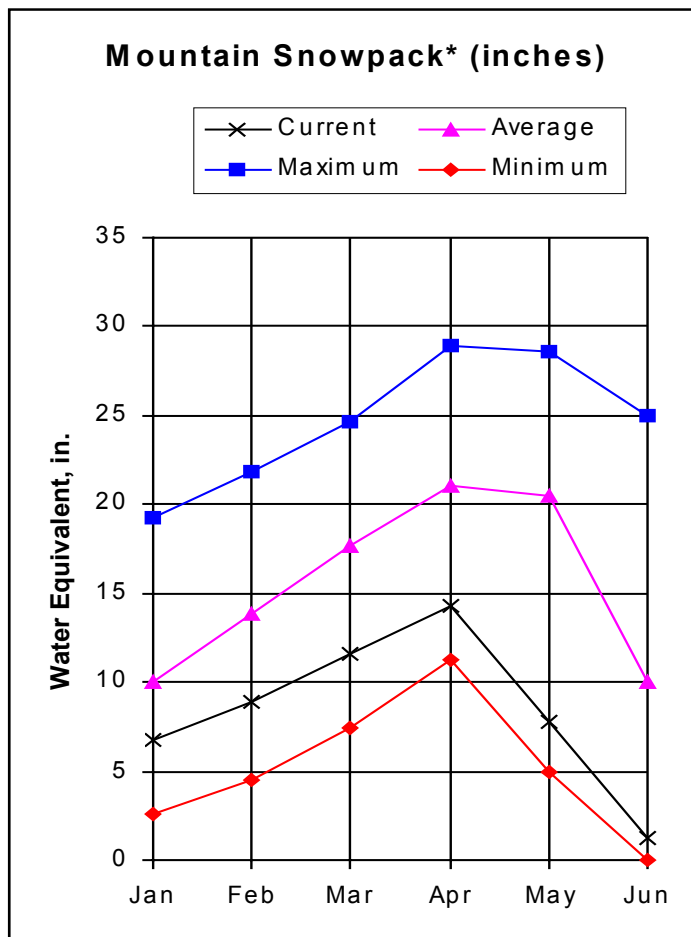
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ANTERO	20.0	19.3	20.0	16.0	BIG THOMPSON BASIN	3	0	0
BARR LAKE	32.0	22.0	29.8	27.7	BOULDER CREEK BASIN	3	45	10
BLACK HOLLOW	8.0	3.0	2.8	4.4	CACHE LA POUDRE BASIN	2	0	0
BOYD LAKE	49.0	18.2	36.4	40.0	CLEAR CREEK BASIN	2	0	0
CACHE LA POUDRE	10.0	3.8	10.2	9.1	SAINT VRAIN BASIN	1	0	0
CARTER	108.9	101.1	99.9	100.2	UPPER SOUTH PLATTE BASIN	6	0	0
CHAMBERS LAKE	9.0	5.4	7.8	5.8	TOTAL SOUTH PLATTE BASIN	16	8	1
CHEESMAN	79.0	49.2	71.5	66.2				
COBB LAKE	34.0	5.3	11.5	14.7				
ELEVEN MILE	97.8	99.1	101.4	97.1				
EMPIRE	38.0	21.0	33.7	30.7				
FOSSIL CREEK	12.0	10.0	10.6	8.0				
GROSS	41.8	19.3	25.6	28.8				
HALLIGAN	6.4	5.1	6.4	6.0				
HORSECREEK	16.0	12.3	15.3	14.1				
HORSETOOTH	149.7	35.2	38.8	123.2				
JACKSON	35.0	16.3	26.1	30.6				
JULESBURG	28.0	14.1	17.6	21.5				
LAKE LOVELAND	14.0	8.9	12.1	11.0				
LONE TREE	9.0	8.5	8.7	8.6				
MARIANO	6.0	2.2	5.3	5.4				
MARSHALL	10.0	5.0	9.6	8.2				
MARSTON	13.0	9.9	17.7	15.3				
MILTON	24.0	17.6	22.5	19.3				
POINT OF ROCKS	70.0	52.1	70.6	66.3				
PREWITT	33.0	17.6	24.0	26.7				
RIVERSIDE	63.1	37.4	55.0	56.0				
SPINNEY MOUNTAIN	48.7	27.8	31.7	35.6				
STANDLEY	42.0	27.1	36.5	36.8				
TERRY LAKE	8.0	5.6	7.6	7.0				
UNION	13.0	9.3	12.5	12.2				
WINDSOR	19.0	7.0	15.1	15.0				

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.

## YAMPA, WHITE, NORTH PLATTE AND LARAMIE RIVER BASINS as of June 1, 2002



\*Based on selected stations

Although only 2 out of 14 SNOTEL locations in these basins have snow remaining at them, they do have the most measurable snow remaining in the state on June 1. The measurements in the North Platte Basin are 15% of average, while in the Yampa and White basins combined are only 7% of average. What measurable snow remains will most likely disappear in the next week or so, melting out a full month ahead of the average melt out date. Precipitation amounts in these basins keep getting worse as the amount during May was only 33% of average, which was the lowest monthly accumulation this water year. The water year total is now only 64% of average. The combined storage in the two major reservoirs in these basins is at 93% of average volume for this time of year, which is about 14% less storage volume that there was last year at this time. Due to another exceptionally dry and warm month the streamflow forecasts in these basins have been reduced significantly from last month. Forecasts range from only 14% of average on the Laramie River near Woods, to 43% of average on the Yampa River at Steamboat Springs.

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Streamflow Forecasts - June 1, 2002

Forecast Point	Forecast Period	<<===== Drier =====		Future Conditions =====		Wetter =====>>		30-Yr Avg. (1000AF)
		=====		Chance Of Exceeding *		=====		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
North Platte River nr Northgate	JUN-SEP	27	31	34	21	47	67	159
Laramie River nr Woods	JUN-SEP	8.5	10.9	12.6	14	24	42	89
Yampa R abv Stagecoach Res	APR-JUL	8.1	10.4	12.0	41	16.7	24	29
Yampa River at Steamboat Springs	APR-JUL	107	115	120	43	135	157	280
Elk River nr Milner	APR-JUL	98	119	134	41	150	176	325
Elkhead Creek nr Elkhead	APR-JUL	8.0	9.9	11.5	30	13.3	16.5	39
ELKHEAD CREEK blw Maynard Gulch	APR-JUL	14.3	17.7	20	34	27	37	59
Fortification Ck nr Fortification	MAR-JUN	1.38	1.81	2.10	28	3.14	4.67	7.50
Yampa River nr Maybell	APR-JUL	273	304	325	33	389	484	990
Little Snake River nr Slater	APR-JUL	30	44	55	35	67	87	159
LITTLE SNAKE R nr Dixon	APR-JUL	70	91	105	32	147	209	330
LITTLE SNAKE R nr Lily	APR-JUL	74	95	110	30	154	219	365
White River nr Meeker	APR-JUL	83	98	110	38	124	147	290

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Reservoir Storage (1000 AF) - End of May

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Watershed Snowpack Analysis - June 1, 2002

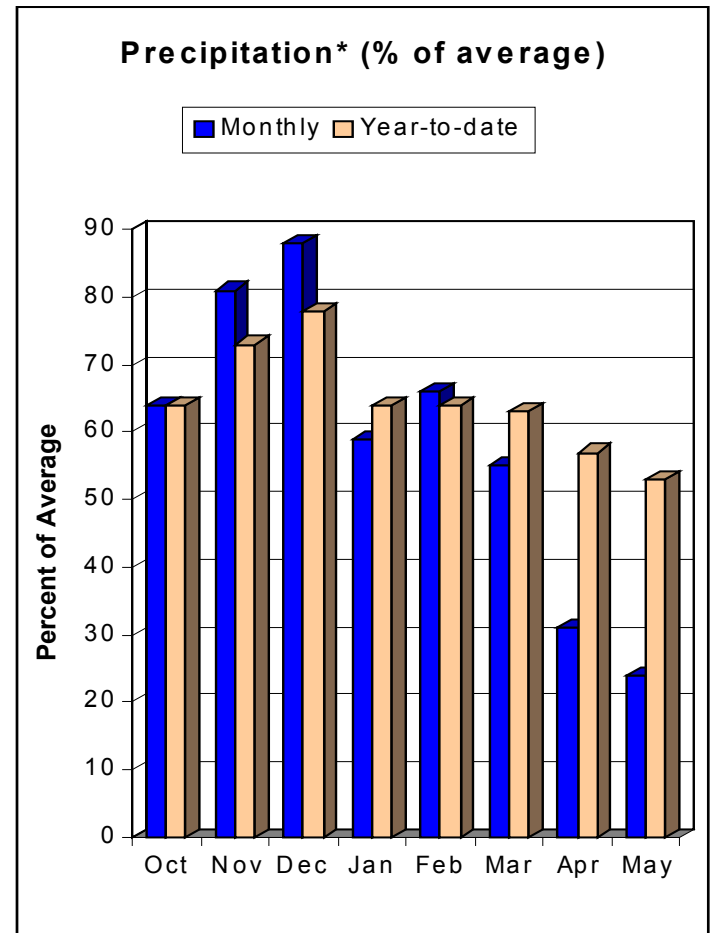
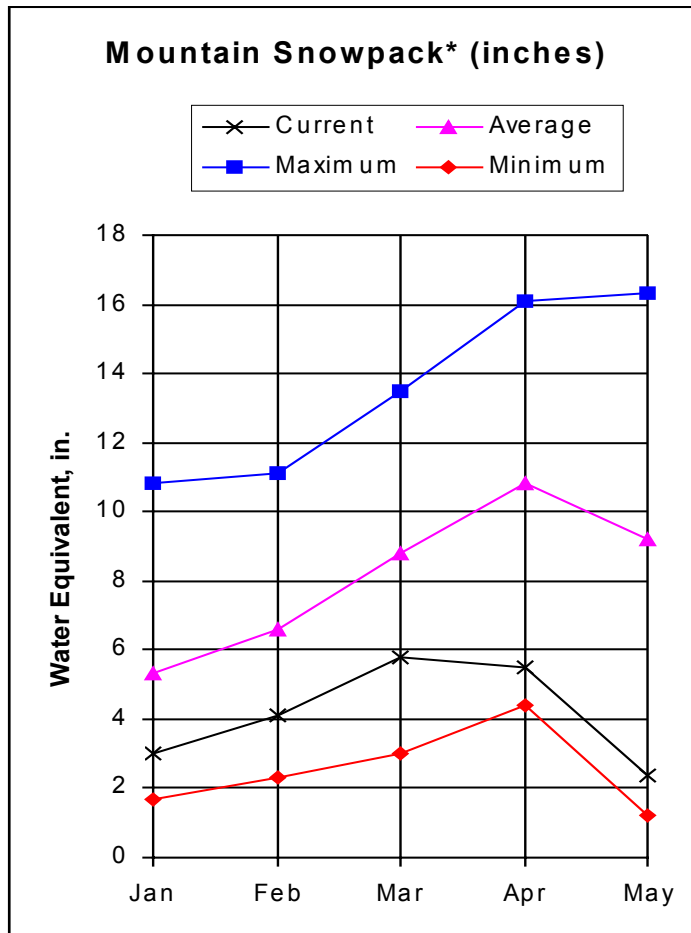
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
STAGECOACH	33.3	28.0	32.0	29.9	LARAMIE RIVER BASIN	2	0	0
YAMCOLO	align="center">9.1	align="center">6.8	align="center">8.5	align="center">7.7	NORTH PLATTE RIVER BASIN	3	54	21
					TOTAL NORTH PLATTE BASIN	5	47	15
					ELK RIVER BASIN	2	0	0
					YAMPA RIVER BASIN	9	42	10
					WHITE RIVER BASIN	4	0	0
					TOTAL YAMPA AND WHITE RIV	12	28	7
					LITTLE SNAKE RIVER BASIN	6	50	14

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
(2) - The value is natural volume - actual volume may be affected by upstream water management.

## ARKANSAS RIVER BASIN as of June 1, 2002



\*Based on selected stations

By May 28th all of the measurable snow has melted at each of the 4 SNOTEL locations in the Arkansas Basin. During late March, the snowpack measurements peaked at about 55% of the average peak, which usually occurs around mid-April. The warm, dry conditions have allowed the snow to disappear about 37 days ahead of the average melt out date. The precipitation during May was only 24% of average, which was the lowest monthly accumulation so far this water year. The water year total is now only 53% of average, which is only 70% of the amount last year at this time. The combined reservoir storage is at 66% of average, which is significantly less than last month. There is 47% less water stored than there was last year at this time. As a result of the continued dry, warm conditions during May, the streamflow forecasts have been lowered significantly from last month's. They range from only 19% of average on Grape Creek near Westcliffe, to 25% of average on the Arkansas River at Salida

ARKANSAS RIVER BASIN  
Streamflow Forecasts - June 1, 2002

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						
		Chance Of Exceeding *						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Chalk Creek nr Nathrop	APR-SEP	3.0	4.8	6.1	23	10.6	17.3	27
Arkansas River at Salida	APR-SEP	60	70	77	25	103	141	310
Grape Creek nr Westcliffe	APR-SEP	2.3	3.2	3.8	19	7.1	11.9	19.6
Pueblo Reservoir Inflow	APR-SEP	65	77	85	20	121	175	430
Huerfano River nr Redwing	APR-SEP	2.3	2.7	2.9	19	4.1	5.8	15.5
Cucharas River nr La Veta	APR-SEP	1.4	2.0	2.4	19	4.6	7.8	13.0
Trinidad Lake Inflow	APR-SEP	6.0	8.6	10.3	23	17.9	29	44

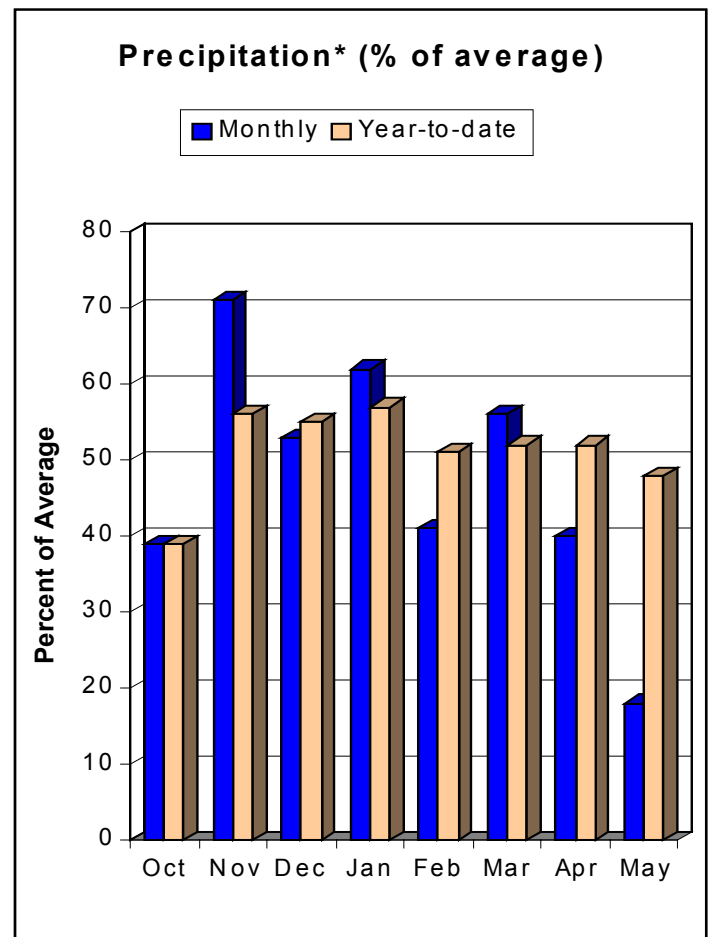
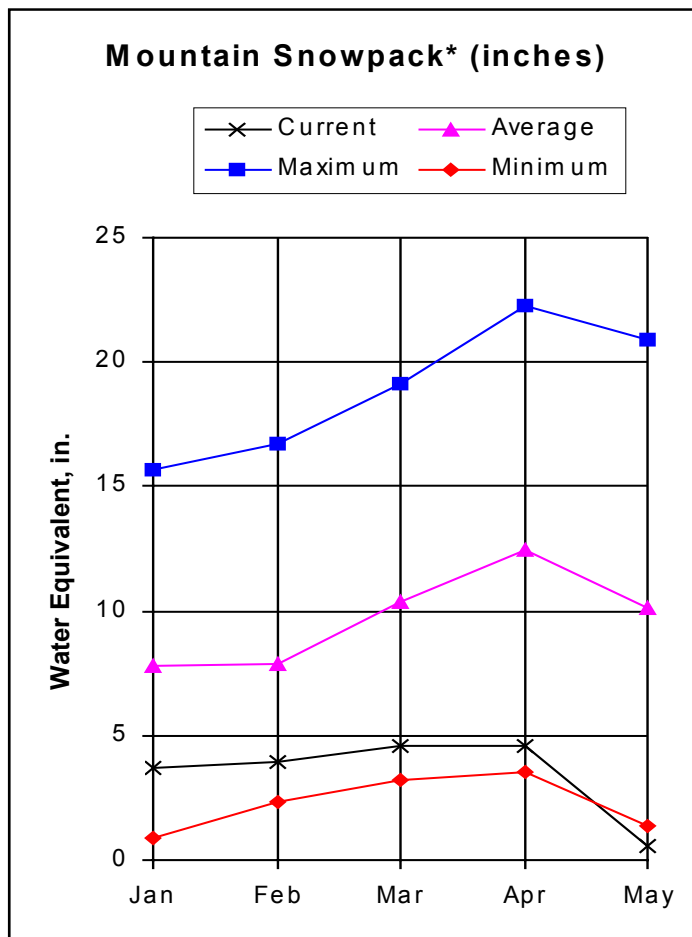
ARKANSAS RIVER BASIN Reservoir Storage (1000 AF) - End of May					ARKANSAS RIVER BASIN Watershed Snowpack Analysis - June 1, 2002			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ADOBE	70.0	12.8	58.6	33.0	UPPER ARKANSAS BASIN	2	0	0
CLEAR CREEK	11.0	6.3	6.1	6.3	CUCHARAS & HUERFANO RIVER	2	0	0
GREAT PLAINS	150.0	19.8	62.8	39.3	PURGATOIRE RIVER BASIN	2	0	0
HOLBROOK	7.0	3.0	6.3	4.1	TOTAL ARKANSAS RIVER BASIN	5	0	0
HORSE CREEK	28.0	0.0	0.2	10.0				
JOHN MARTIN	335.7	61.6	156.6	128.1				
LAKE HENRY	8.0	4.7	6.9	5.7				
MEREDITH	42.0	9.3	30.2	18.5				
PUEBLO	236.7	118.2	179.1	160.1				
TRINIDAD	72.3	16.1	33.3	29.7				
TURQUOISE	126.6	66.8	84.8	77.6				
TWIN LAKES	86.0	45.5	60.7	42.6				

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
(2) - The value is natural volume - actual volume may be affected by upstream water management.

## UPPER RIO GRANDE BASIN as of June 1, 2002



\*Based on selected stations

It is no surprise that the June 1 snowpack measurements are a big fat zero at all of the SNOTEL snow measuring locations in the Rio Grande Basin. After the record setting, low snow measurements last month, the continued warm temperatures and dry conditions made sure that all of the measurable snow was melted by mid-May leaving dry slopes nearly two months ahead of the average melt out date. The precipitation during May was only 18% of the average monthly amount, which is the lowest monthly accumulation this water year. The water year total is now only 48% of average, which is only 45% of last year's amount on June 1. Reservoirs in the basin have a storage level of only 64% of average on June 1. There is about 45% less storage than there was last year at this time. The continued dry and warm conditions through May have caused the streamflow forecasts to be lowered even further from last month. Now the forecasts range from only 4% of average flow on the San Antonio River at Ortiz, to 25% of average at the Inflow to Rio Grande Reservoir.

UPPER RIO GRANDE BASIN  
Streamflow Forecasts - June 1, 2002

		<<===== Drier =====		Future Conditions =====		Wetter =====>>		
Forecast Point	Forecast Period			Chance Of Exceeding *				30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Rio Grande at Thirty Mile Bridge	APR-SEP	29	31	32	24	33	35	136
Rio Grande Reservoir Inflow	APR-JUL	27	29	30	25	32	34	118
Rio Grande at Wagon Wheel Gap	APR-SEP	63	68	72	21	89	114	345
South Fork Rio Grande at South Fork	APR-SEP	16.0	17.0	18.0	14	24	32	132
Rio Grande nr Del Norte	APR-SEP	80	86	90	17	114	149	531
Saguache Creek nr Saguache	APR-SEP	3.3	4.3	5.0	15	9.6	16.5	33
Alamosa Creek abv Terrace Reservoir	APR-SEP	7.8	9.0	9.8	14	15.6	24	70
La Jara Creek nr Capulin	MAR-JUL	0.52	0.77	0.94	11	2.50	4.81	8.70
Trinchera Water Supply	APR-SEP	3.8	4.7	5.4	14	10.1	17.0	40
Platoro Reservoir Inflow	APR-JUL	7.7	8.5	9.0	14	12.7	18.1	64
	APR-SEP	8.3	9.1	9.7	14	13.8	19.8	71
Conejos River nr Mogote	APR-SEP	25	27	29	15	41	59	200
San Antonio River at Ortiz	APR-SEP	0.3	0.5	0.6	4	1.1	2.2	16.4
Los Pinos River nr Ortiz	APR-SEP	6.0	6.6	7.1	10	11.7	18.5	74
Culebra Creek at San Luis	APR-SEP	2.7	3.8	4.5	20	8.1	13.4	23
Costilla Reservoir inflow	MAR-JUL	1.4	1.6	1.8	17	2.8	4.2	10.6

UPPER RIO GRANDE BASIN Reservoir Storage (1000 AF) - End of May					UPPER RIO GRANDE BASIN Watershed Snowpack Analysis - June 1, 2002			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
CONTINENTAL	15.0	4.1	9.8	8.2	ALAMOSA CREEK BASIN	1	0	0
PLATORO	53.7	14.9	26.7	24.5	CONEJOS & RIO SAN ANTONIO	2	0	0
RIO GRANDE	51.0	13.8	30.6	24.2	CULEBRA & TRINCHERA CREEK	2	0	0
SANCHEZ	103.0	21.5	32.5	26.9	UPPER RIO GRANDE BASIN	2	0	0
SANTA MARIA	45.0	7.8	12.3	11.4	TOTAL UPPER RIO GRANDE BA	8	0	0
TERRACE	13.1	4.1	8.3	8.0				

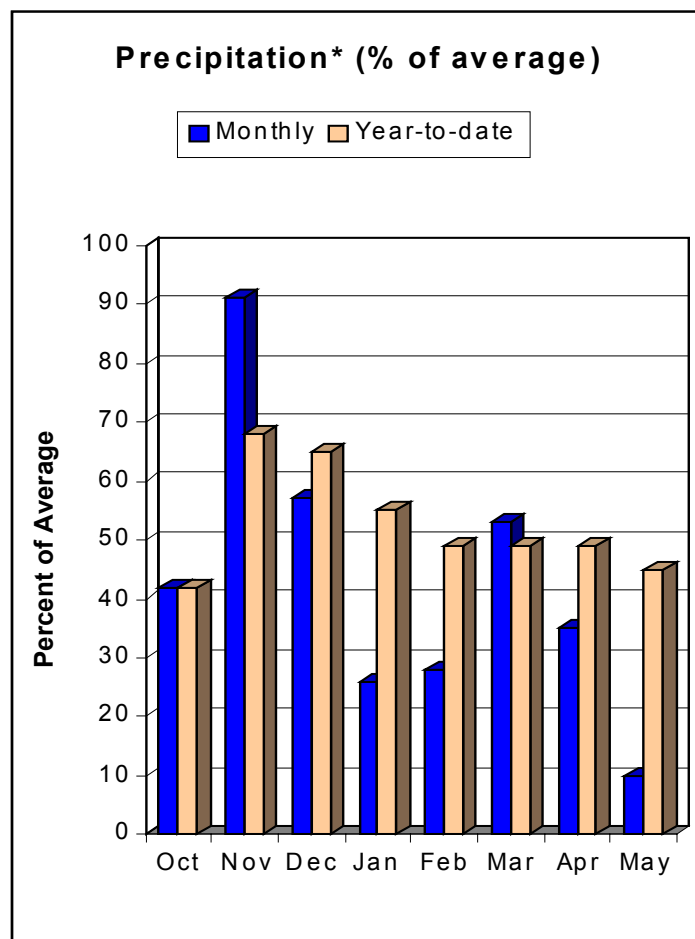
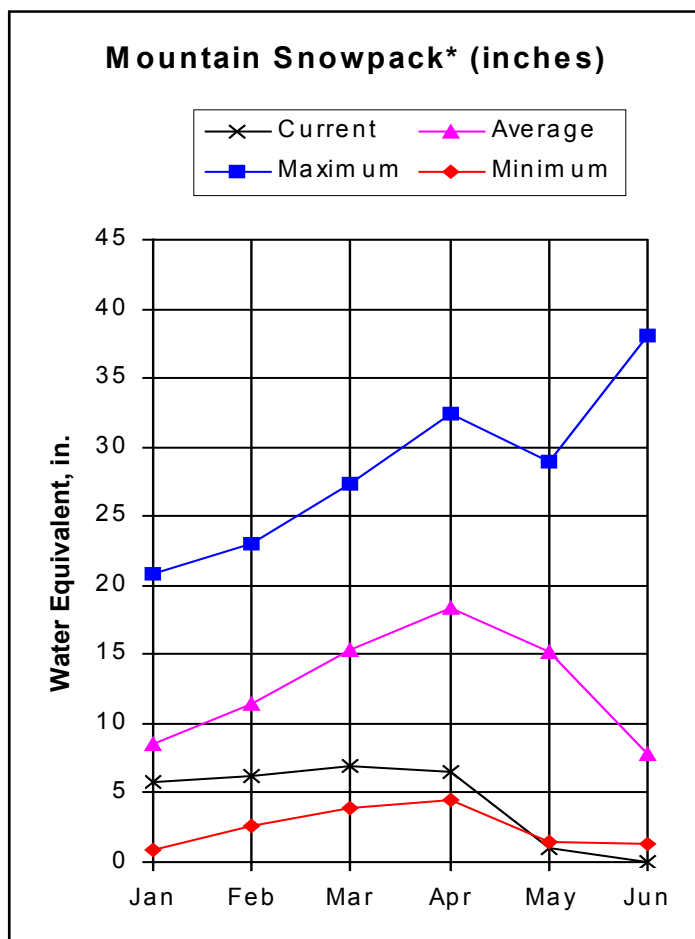
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The average is computed for the 1971-2000 base period.

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## SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS as of June 1, 2002



\*Based on selected stations

Out of the 16 SNOTEL snow measuring sites in these basins, none of them has any measurable snow remaining at them on June 1. By mid-May, the warm temperatures and dry conditions had melted out what was left of the record low snowpack leaving extremely dry slopes nearly two months before the average melt out date. Precipitation during April was only 10% of the average for the month. The water year total is only 45% of average, which is only 46% of the amount of precipitation last year by June 1. Reservoir storage has been diminished much further since last month to only 57% of average volume. There is only 57% of the amount stored that there was last year at this time. Given that most of the snow has melted away long ago, combined with the warm, dry conditions, the streamflow forecasts have been reduced below last month's already dismal forecast. Forecast range from only 9% of average at the Inflow to Navajo Reservoir, to 24% of average on the San Miguel River near Placerville.

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS  
Streamflow Forecasts - June 1, 2002

Forecast Point	Forecast Period	<===== Drier =====		Future Conditions		===== Wetter =====>>		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Dolores River at Dolores	APR-JUL	39	42	45	17	58	77	265
McPhee Reservoir inflow	APR-JUL	40	44	47	15	62	85	320
San Miguel River nr Placerville	APR-JUL	12.0	24	32	24	40	52	132
Gurley Reservoir Inlet	JUN-JUL	0.88	1.10	1.26	21	2.00	3.08	6.00
	JUNE			1.00	21			4.67
	JULY			0.26	20			1.32
Cone Reservoir Inlet	JUN-JUL	0.12	0.20	0.26	18	0.58	1.04	1.43
	JUNE			0.20	19			1.04
	JULY			0.06	16			0.38
Lilylands Reservoir Inlet	JUN-JUL	0.10	0.13	0.15	13	0.31	0.55	1.14
	JUNE			0.12	14			0.87
	JULY			0.03	11			0.27
Rio Blanco at Blanco Diversion	APR-JUL	5.2	6.6	7.5	14	12.7	20	53
Navajo River at Oso Diversion	APR-JUL	6.8	8.7	10.0	15	16.7	27	69
San Juan River nr Carracus	APR-JUL	19.0	38	54	13	73	107	405
Piedra River nr Arboles	APR-JUL	22	24	25	11	36	51	230
Vallecito Reservoir Inflow	APR-JUL	34	36	37	18	43	52	205
Navajo Reservoir Inflow	APR-JUL	60	69	75	9	136	226	800
Animas River at Durango	APR-JUL	63	78	89	20	126	180	440
Lemon Reservoir Inflow	APR-JUL	8.8	10.7	12.0	21	17.2	25	58
La Plata River at Hesperus	APR-JUL	2.8	3.3	3.6	14	6.0	9.5	25
Mancos River nr Mancos	APR-JUL	4.1	5.5	6.4	16	12.2	21	40
	JUNE			1.1	8			13.7
	JULY			0.30	7			4.60

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS  
Reservoir Storage (1000 AF) - End of May

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS  
Watershed Snowpack Analysis - June 1, 2002

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
GROUNDHOG	21.7	11.2	18.7	18.9	ANIMAS RIVER BASIN	7	0	0
JACKSON GULCH	10.0	2.8	10.0	9.3	DOLORES RIVER BASIN	4	0	0
LEMON	40.0	8.2	38.0	29.2	SAN MIGUEL RIVER BASIN	3	0	0
MCPHEE	381.2	204.2	303.5	328.0	SAN JUAN RIVER BASIN	3	0	0
NARRAGUINNEP	19.0	12.4	18.2	17.4	TOTAL SAN MIGUEL, DOLORES			
VALLECITO	126.0	44.5	109.2	93.9	SAN JUAN RIVER BASINS	16	0	0

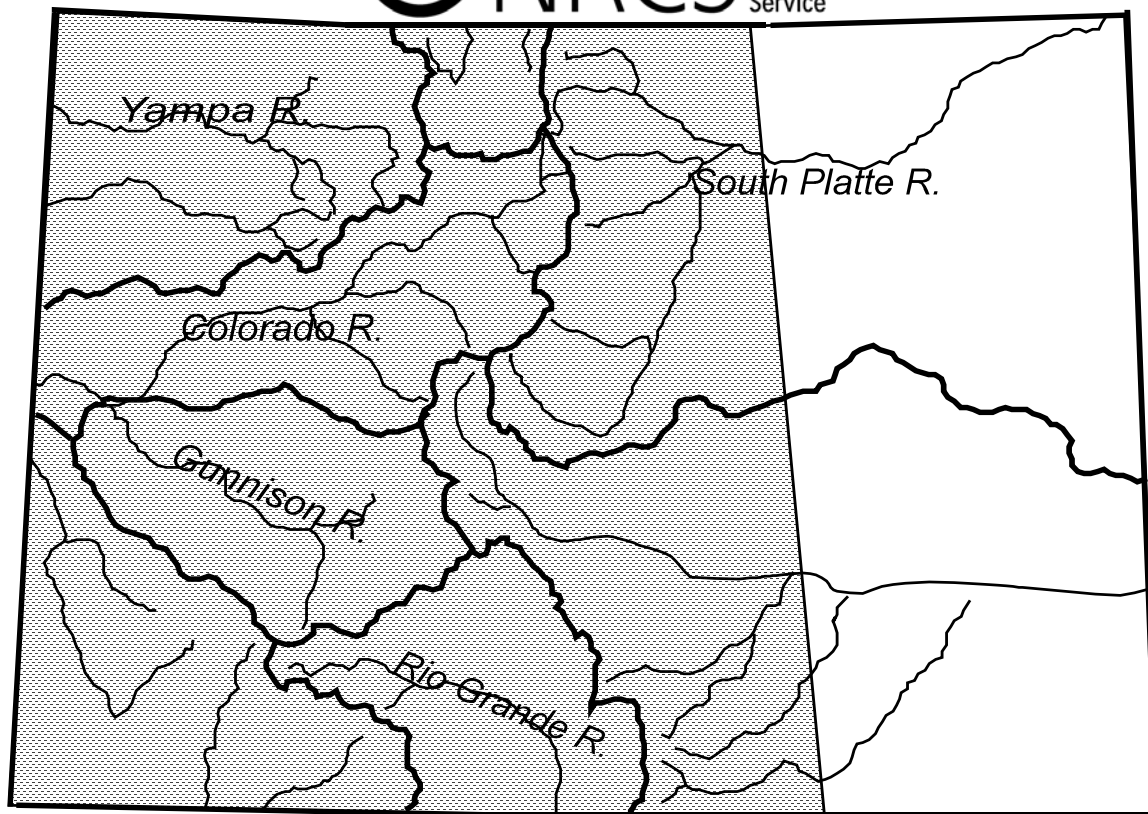
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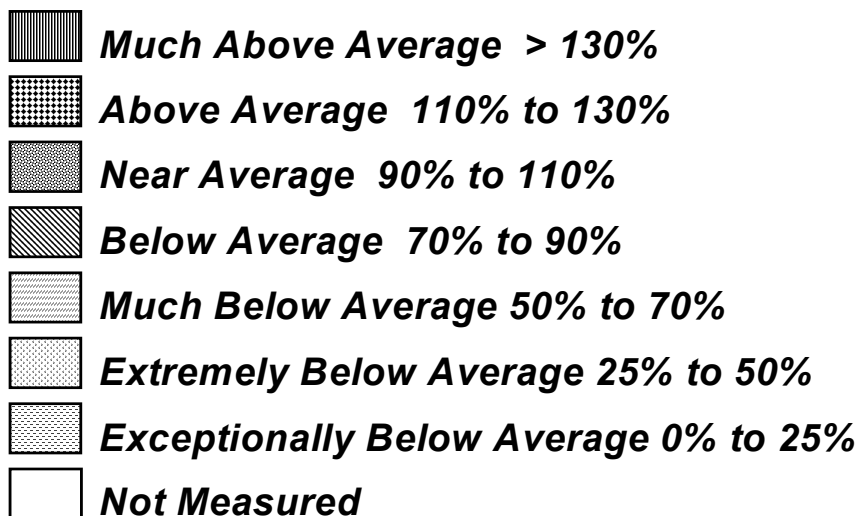
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## **Snowpack June 1, 2002**

**Statewide: 2% of Average  
10% of Last Year**





655 Parfet Street, Room E200C  
Lakewood, CO 80215-5517

In addition to the basin outlook reports, water supply forecast information for the Western United States is available from the Natural Resources Conservation Service and the National Weather Service monthly, January through May. The information may be obtained from the National Resources Conservation Service web page at <http://www.wcc.nrcs.usda.gov/water/quantity/westwide.html>.

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*Issued by*

**Bruce Knight**  
**Chief**  
**Natural Resources Conservation Service**  
**U.S. Department of Agriculture**

*Released by*

**Allen Green**  
**State Conservationist**  
**Natural Resources Conservation Service**  
**Lakewood, Colorado**

# **Colorado**

## **Basin Outlook Report**

**Natural Resources Conservation Service**  
**Lakewood, CO**